

HOGAN & HARTSON
L.L.P.

ARI Q. FITZGERALD
(202) 637-5423

COLUMBIA SQUARE
555 THIRTEENTH STREET, N.W.
WASHINGTON, DC 20004-1109
TEL (202) 637-5600
FAX (202) 637-5910
WWW.HHLAW.COM

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Marlene Dortch, Esq.
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

RE: Alliance of Automobile Manufacturers
***Ex Parte* Submission regarding the**
Dedicated Short Range Communications Service
WT Docket 01-90; ET Docket 98-95

Dear Ms. Dortch:

The Alliance of Automobile Manufacturers (the “Alliance”) is a trade association composed of the world’s leading car and light truck manufacturers, with approximately 600,000 employees at more than 250 facilities in 35 states.¹ One key focus of the Alliance is the advancement of motor vehicle safety. With this goal in mind, the Alliance submits this *ex parte* letter to further explain and emphasize its support for the petitions for reconsideration, filed by ARINC and ITS America in the above-referenced dockets, that call for the Commission to designate Channel 172 ²

¹ The Alliance is composed of the following member companies: BMW Group, DaimlerChrysler, Ford Motor Company, General Motors, Mazda, Mitsubishi Motors, Porsche, Toyota and Volkswagen. Alliance members account for more than 90 percent of vehicle sales in the United States.

² Channel 172 is one of six service channels in the DSRC band plan. It has long been identified by the DSRC community as the best channel for critical safety applications because it is located furthest from the fixed satellite service (“FSS”) operations at 5.925-6.425 GHz and is therefore the least likely to receive out-of-band interference from these operations.

in the Dedicated Short Range Communications Service (“DSRC”) as a high availability, low latency channel for the highest priority emergency communications.³

Introduction

The success of DSRC depends upon a cooperative partnership between government and the private sector to achieve Congress’ goal of improving road safety.⁴ In its *DSRC Order*, the Commission took an important step in paving the way for a wide array of innovative safety and non-safety applications, and the members of the Alliance are currently actively engaged in developing DSRC applications. However, in order to implement vehicle-to-vehicle collision mitigation techniques – with the ability to save lives and reduce injuries – Channel 172 must be designated exclusively for high priority, latency intolerant safety uses. For the reasons described below, without usage restrictions on Channel 172, reliable operation of crash mitigation applications cannot be assured.

By making the requested change to the rules, the Commission will be fulfilling its obligations under the cooperative partnership needed to fully realize the potential safety benefits of DSRC. The Commission will also be acting consistent with the policies recommended in the Report of its Spectrum Policy Task Force (“Report”). The Report stated that prescribing spectrum use by regulation is appropriate for “uses that provide clear, non-market public interest benefits or that require regulatory prescription to avoid market failure. . . . Public safety and critical infrastructure may also require dedicated spectrum at particular times *to ensure priority access for emergency communications.*”⁵ Such is the case here.

³ The petitions for reconsideration were filed September 2, 2004 in response to the Commission’s February 10, 2004 *Report and Order*, FCC 03-324, in this proceeding (“*DSRC Order*”). The Alliance filed comments in support of these petitions on September 30, 2004.

⁴ See *DSRC Order* at ¶¶ 6-9 (describing DOT’s statutory obligation to “promote” intelligent transportation systems, and the Commission’s obligation to consult with DOT to consider the spectrum needs for such systems).

⁵ Spectrum Policy Task Force, ET Docket No. 02-135 *Report* (Nov. 2002) at 41 (emphasis added). See also *DSRC Order* at n.8 (using “safety” and “public safety” terminology interchangeably “because DSRC involves both safety of life communication . . . as well as communication transmitted by public safety entities”).

Control Channel Protocol Prioritization Is Inadequate to Prevent Delays

Under the rules adopted in the *DSRC Order*, the entire DSRC band is shared among safety and non-safety uses.⁶ Without a designated channel for critical, latency-sensitive safety applications, the Alliance remains deeply concerned that commercial and other lower priority uses operating throughout the band will result in *no* channel being available that can adequately support vehicle-to-vehicle collision mitigation applications.⁷ Communications for collision mitigation applications take place during the last 500 milliseconds prior to a collision and are extremely intolerant of delay. In the *DSRC Order*, the Commission recognized that timeliness and reliability are essential for vehicle-to-vehicle safety applications, but nevertheless declined to reserve a specific service channel for such use, finding that such action would be “premature.” Instead, the Commission decided to rely on the prioritization system established within the control channel protocol to ensure the ability of such applications to function, although it recognized that it may be necessary to revisit the issue in the future.⁸

The Alliance submits that reliance merely on the control channel protocol’s prioritization system will be inadequate to ensure that critical vehicle-to-vehicle safety communications operate reliably and reach their intended recipients as quickly as required. The control channel is the primary channel for all small DSRC messages. Vehicles will regularly transmit their position, trajectory and other data on this channel. When two vehicles determine, based on this transmitted information, that a collision is likely, they will both migrate to Channel 172 in order to exchange the information necessary to perform pre-collision preparations. However, even with “high priority” status, the vehicles will not be able to communicate promptly on Channel 172 if the channel is already congested with lower priority communications.

The Vehicle Safety Communications Project, a joint project involving certain Alliance member companies and the Department of Transportation (“DOT”), recently modeled various channel loading situations to determine the potential impact on the reception of emergency messages. While the results have not been

⁶ See, e.g., *DSRC Order* at ¶¶ 57-58 (Each license permits use of all service channels; there is no limit on the number of non-exclusive geographic roadside unit licenses granted).

⁷ These applications enable a vehicle to prepare for a possible collision by, for example, pretensioning seatbelts and preparing airbags for deployment.

⁸ *DSRC Order* at ¶ 29.

publicly released by DOT, the Alliance understands that, under certain conditions in the simulation environment, high priority messages – while still enjoying better performance than routine ones – were nevertheless slowed down by the channel occupancy level. Accordingly, in critical safety application scenarios where large volumes of emergency data need to be communicated quickly with a high degree of reliability, it is important for there to be an uncongested channel on which to operate.

To understand why a prioritization scheme would not provide adequate speed and reliability, one should consider that there would likely be situations involving low priority communications on Channel 172 coming from a “hidden transmitter” – *i.e.*, a transmitter that is positioned in such a way that it cannot “hear” the high priority notification coming from a vehicle involved in an emergency situation. As a result, the hidden transmitter continues to transmit, causing interference to the reception of the emergency communications. This could create hundreds of milliseconds of delay, leaving insufficient time to implement collision mitigation techniques. Another delay situation might occur where a vehicle attempts to transmit its high priority message at the same instant as a number of other, lower priority applications. As a result, the packets “collide,” resulting in no intelligible information being received.

Action Is Needed Now to Prevent the Establishment of Low Priority Uses on Channel 172 and to Provide the Assurance Needed to Commence the Long Automotive Development Cycle

The *DSRC Order* imposes no limit on the number of non-exclusive geographic licenses granted. Given that under the existing rules any licensee is authorized to use any service channel, it is logical to conclude that Channel 172 will be chosen for commercial and other low priority uses in some areas. Licenses are already being granted in the DSRC service. There is a real possibility that Channel 172 will become congested with incumbent users before advanced vehicle-to-vehicle safety applications are even deployed. Automotive design development cycles typically run five to six years, especially for new electronic technology like DSRC, which requires integration into a vehicle’s electronic architecture and wiring harnesses followed by extensive safety and reliability testing. Due to these long lead times, manufacturers need to know today the likely status of spectrum availability several years into the future. The current uncertainty regarding the future availability (*i.e.*, channel loading) of Channel 172 may well deter or delay decisions to move forward with major investments in developing complex collision mitigation applications.

The Alliance believes that the most efficient and effective means of designating Channel 172 would be for the Commission to do so directly by rule amendment, as part of its order on reconsideration in this proceeding. Delegating this action to the standards writing process would entail delay as well as uncertainty as to the technical effectiveness of such an effort. Any revised standard would need to be tested (after standard-compliant equipment prototypes are built) and then considered by the Commission prior to adoption into the rules. The standards writing process is particularly vulnerable to delay at this time, given the possibility that the process will have to be transferred from one standards body (ASTM) to another (IEEE). By the time a revised standard is adopted, tested and codified by the Commission, significant time could be lost. If the Commission nevertheless were to choose this inferior option, it should take whatever action necessary to prevent the establishment of an incumbent user base on Channel 172 until the revised standard is in full force.

Spectrum Designation for Safety of Life Uses Is Consistent with Precedent

In order to ensure the availability of these important new vehicular safety applications, the Commission should follow its precedent and designate Channel 172 exclusively for high priority, latency intolerant safety uses. The Commission has long been mindful of its obligation under Section 1 of the Communications Act to “promot[e] safety of life and property through the use of . . . radio communications.” 47 U.S.C. § 151. Accordingly, the Commission has frequently extended special protections for safety-of-life services,⁹ including restricting general use access to spectrum that is needed to provide such services. To name a few examples, the Commission has set aside spectrum for safety-of-life purposes in the in the 220 MHz band,¹⁰ in the 800 MHz band,¹¹ in the aeronautical and maritime

⁹ See *Carrier Current Systems Including Broadband Over Power Line Systems*, ET Docket 03-104, Report and Order, FCC 04-245 (rel. Oct. 28, 2004) at ¶ 52 (“public safety systems merit addition protection because of the often critical and/or safety-of-life nature of the communications they provide.”); *Amendments of Parts 2 and 95 of the Commission’s Rules to Create a Wireless Medical Telemetry Service*, Report and Order, 15 FCC Rcd 11206, 11225 (2000) (“Despite the fact that the medical telemetry has no legal protection from interference in [the current] bands, the fact remains that the Commission has had to take steps to protect medical telemetry from interference because it is used to protect safety of life.”).

¹⁰ *Amendment of Part 90 of the Commission’s Rules to Provide for the Use of the 220-222 MHz Band*, Report and Order, 6 FCC Rcd 2356 (1991)(set-aside for public safety needed “to more effectively coordinate their responses to safety-of-life situations . . .”).

services,¹² in the 4.9 GHz band,¹³ and in the wireless medical telemetry service.¹⁴ Specifically in the vehicular safety context, the Commission has designated spectrum for vehicular radars in the 46.7 – 46.9 MHz and 76 – 77 GHz bands.¹⁵ It has also designated vehicular radar as the only ultra-wideband application that can operate on an unlicensed basis in the 22-29 GHz band.¹⁶ Like vehicular radar, DSRC provides the opportunity to implement collision avoidance and mitigation applications that will reduce the number of fatalities on the nation's highways.

Conclusion

The Commission was clear in the *DSRC Order* that non-safety uses of the DSRC band would be inappropriate if such use resulted in the degradation of safety

¹¹ *Improving Public Safety in the 800 MHz Band*, WT Docket 02-55, Report and Order, FCC 04-168 (rel. Aug. 6, 2004) at ¶ 7 (Commission determined that it was required to “take the most effective actions, in the short-term and long-term, to promote robust and reliable public safety communications in the 800 MHz band to ensure the safety of life and property”).

¹² FCC's Advisory Committee for the 200 World Radiocommunication Conference, Public Notice, DA 99-398 (rel. Feb. 26, 1999) (“it is of paramount importance that the distress and safety channels of the maritime mobile service and the allocations to the aeronautical mobile safety service be kept free from harmful interference and unauthorized use since they are essential for the safety of life and property”).

¹³ *4.9 GHz Band Transferred from Federal Government Use*, WT Docket No. 00-32, Second Report and Order, FCC 02-47 (rel. Feb. 27, 2002) at ¶ 28 (reserving the band for public safety after noting that “the public safety commenters consistently state . . . they need dedicated spectrum that will be reliably available without delay.”)

¹⁴ *Amendments of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service*, Report and Order, 15 FCC Rcd 11206 (2000) (allocating 14 megahertz of spectrum to WMTS so that potentially “life critical” equipment could operate on an interference-protected basis”).

¹⁵ *Amendment of Parts 2, 15 & 97 to Permit Use of Radio Frequencies Above 40 GHz*, First Report and Order, 11 FCC Rcd 4481 (1995) at ¶ 6 (“establishing spectrum for vehicle radar systems is seen as an important initiative in the development of Intelligent Transportation Systems which is intended to offer significant benefits to the American public by improving highway safety.”) See 47 C.F.R. § 15.253.

¹⁶ See *Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, ET Docket 98-153, First Report and Order, FCC 02-48 (rel. April 22, 2002) at ¶ 63.

applications.¹⁷ The Commission also recognized that it may need to revisit its decision not to reserve Channel 172.¹⁸ For the reasons explained above, use of Channel 172 for non-emergency services threatens to degrade safety applications, and the likelihood that incumbent non-priority services will become entrenched in the channel provides a strong rationale for acting now rather than later. Thus, the Commission should do as it has done in the past and set aside spectrum – in this case, Channel 172 – to ensure that important vehicle-based safety-of-life applications can operate effectively without interference from lower priority applications.

Respectfully submitted,

/s/ Ari Q. Fitzgerald

Ari Q. Fitzgerald
David L. Martin

Counsel for the Alliance of
Automobile Manufacturers

¹⁷ *DSRC Order* at ¶ 15.

¹⁸ *DSRC Order* at ¶ 29.